–IN THE CLAIMS–

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) ~~An~~ method for autofocusing ~~method~~ an optical instrument, in particular a telescope along an optical axis, ~~particularly for telescopes for surveying instruments,~~ said optical instrument having a focusing member and image sensors that resolve the image signal into ~~individual image elements (pixels)~~ pixels, such as a CCD lines and/or matrices as well as CMOS image sensors, *characterized in that*,

- on the basis of ~~the~~ said pixel that is located closest to ~~the~~ said optical axis, the local signal amplitude is calculated from the monotonically decreasing or increasing signal all the way to the next local maximum and minimum,
- as long as this local signal amplitude is considerable smaller than the maximum signal and ~~the~~ said focusing member of the telescope lens is in the focusing position for short focusing distances, this focusing member is shifted in large increments,
- depending on the magnitude of the local signal amplitude, the focusing distance is shortened in the area of greater focusing distances in relation to the maximum signal and to the position of ~~the~~ said focusing member,

- at a certain magnitude of the local signal amplitude in relation to the maximum signal, the cross correlation functions (CCF) are each additionally formed from several pixels of the signal and from suitable comparison structures,
- at a certain ratio of a reference function formed on the basis of the CCD to the local signal amplitude, an increment range that is comparable to the optical depth of field is selected and focused to the maximum of the CCF.

2. The method according to Claim 1, characterized in that, for images of two dimensional image detectors, the calculations are performed in the direction of the rows, in the direction of the columns or else in both directions at the same time.

3. (canceled)

4. The method according to Claim 1, characterized in that an ideal edge is provided as the comparison structure for the cross correlation function (CCF).

5. (canceled)

6. (New) A method of autofocusing along an optical axis a telescope for surveying instruments, said telescope having a focusing member and image sensors that resolve the image signal into pixels, such as a CCD lines and/or matrices as well as CMOS image sensors, characterized in that,

- on the basis of the pixel that is located closest to the optical axis, the local signal amplitude is calculated from the monotonically decreasing or increasing signal all the way to the next local maximum and minimum,
- as long as this local signal amplitude is considerable smaller than the maximum signal and the focusing member of the telescope lens is in the focusing position for short focusing distances, this focusing member is shifted in large increments,
- depending on the magnitude of the local signal amplitude, the focusing distance is shortened in the area of greater focusing distances in relation to the maximum signal and to the position of the focusing member,
- at a certain magnitude of the local signal amplitude in relation to the maximum signal, the cross correlation functions (CCF) are each additionally formed from several pixels of the signal and from suitable comparison structures,
- at a certain ratio of a reference function formed on the basis of the CCD to the local signal amplitude, an increment range that is comparable to the optical depth of field is selected and focused to the maximum of the CCF, and
- wherein the focusing path until the next measurement is determined as the product resulting from the ratio of the maximum signal to the local signal amplitude, from the focus position relative to the position during focusing towards the infinite and from a constant.

7. (New) A method of autofocusing a telescope for surveying instruments, said telescope having a focusing member and image sensors that resolve the image signal into pixels, such as a CCD lines and/or matrices as well as CMOS image sensors, characterized in that,

- on the basis of the pixel that is located closest to the optical axis, the local signal amplitude is calculated from the monotonically decreasing or increasing signal all the way to the next local maximum and minimum,
- as long as this local signal amplitude is considerable smaller than the maximum signal and the focusing member of the telescope lens is in the focusing position for short focusing distances, this focusing member is shifted in large increments,
- depending on the magnitude of the local signal amplitude, the focusing distance is shortened in the area of greater focusing distances in relation to the maximum signal and to the position of the focusing member,
- at a certain magnitude of the local signal amplitude in relation to the maximum signal, the cross correlation functions (CCF) are each additionally formed from several pixels of the signal and from suitable comparison structures,
- at a certain ratio of a reference function formed on the basis of the CCD to the local signal amplitude, an increment range that is comparable to the optical depth of field is selected and focused to the maximum of the CCF, and
- wherein the maximum of the CCF is employed as the reference function.